Claims

What is claimed is:

1. A voice coil actuator arm comprising:

a head arm collection including a first head arm, a second head arm and a third head arm;

wherein each member of said head arm collection is comprised of:

at least one ground plane formed in said head arm collection member; and

a first and a second pair of coplanor, parallel transmission paths essentially parallel to said ground plane interconnecting both a read differential wire pair and a write differential wire pair to a head slider, respectively;

said first parallel transmission path pair interconnects to a disk drive read interface; and

said second parallel transmission path pair interconnects to a disk drive write interface.

2. The apparatus of Claim 1,

wherein said first head arm is further comprised of:

a third and a fourth pair of coplanor, parallel transmission paths essentially parallel to said ground plane interconnecting both a second read differential wire pair and a second write differential wire pair to a second head slider, respectively;

said third parallel transmission path pair interconnects to a second disk drive read interface; and

said fourth parallel transmission path pair interconnects to a second disk drive write interface.

3. The apparatus of Claim 1, further comprising:

an analog interface interconnecting said first parallel transmission path and said disk read interface, for at least one of said head arm collection members; and

said analog interface interconnecting said second parallel transmission path and said disk write interface, for at least one of said head arm collection members.

4. The apparatus of Claim 1, further comprising:

an analog interface interconnecting said first parallel transmission path and said disk read interface, for each of said head arm collection members; and

said analog interface interconnecting said second parallel transmission path and said disk write interface, for each of said head arm collection members.

5. A disk drive comprising said voice coil actuator arm of Claim 1.

6. A method for a head arm providing electrical interconnection of a read differential wire pair and a write differential wire pair between a head slider and a disk drive read interface and a disk drive write interface, respectively, comprising the steps of:

creating a ground plane in said head arm;

providing at least two differential signal paths as essentially parallel, coplanor traces on said head arm traversing an essentially fixed distance parallel to said ground plane as a first differential trace pair and a second differential trace pair;

providing connectivity to said head slider for said read differential wire pair and for said write differential wire pair via said first and said second differential trace pair, respectively;

providing connection to said disk drive read interface via said first differential trace pair; and

providing connection to said disk drive write interface via said second differential trace pair.

7. A method providing electrical interconnection by a voice coil actuator arm through at least one head arm between at least one head slider coupled to said head arm and a disk drive read interface and a disk drive write interface, for said head slider, comprising the steps of:

said head arm providing electrical interconnection between said head slider and said disk drive read interface and said disk drive write interface as in Claim 6.

8. The method of Claim 7, further comprising the steps of:

providing a third differential signal path and a fourth differential signal path as essentially parallel, coplanor traces on said head arm traversing essentially parallel to said ground plane as a third differential trace pair and a fourth differential trace pair;

providing connectivity to a second head slider for a second read differential wire pair and for a second write differential wire pair via said third differential trace pair and said fourth differential trace pair, respectively;

providing connection to a second disk drive read interface via said third differential trace pair; and

providing connection to a second disk drive write interface via said fourth differential trace pair.

9. The method of Claim 8,

wherein said voice coil actuator arm is further comprised of a second head arm; and

said method is further comprised of the steps of:

said second head arm providing electrical interconnection between a third head slider and a third disk drive read interface and a third disk drive write interface as in Claim 6.

10. The method of Claim 9,

wherein said voice coil actuator arm is further comprised of a third head arm; and

said method is further comprised of the steps of:

said third head arm providing electrical interconnection between a fourth head slider and a fourth disk drive read interface and a fourth disk drive write interface as in Claim 6.

11. The method of Claim 7,

wherein the step providing connection to said disk drive read interface via said first differential trace pair is further comprised of the steps of:

providing a first read analog interface connection to said first differential trace pair; and

providing a first disk read analog interface connection to said disk drive read interface; and

wherein the step providing connection to said disk drive write interface via said second differential trace pair is further comprised of the steps of:

providing a first write analog interface connection to said second differential trace pair; and

providing a first disk write analog interface connection to said disk drive write interface.

12. A method of operating a disk drive, comprising: the steps of Claim 7.

13. The method of Claim 6, further comprising the steps of:

providing a third differential signal path and a fourth differential signal path as essentially parallel, coplanor traces on said head arm traversing an essentially fixed distance parallel to said ground plane as a third differential trace pair and a fourth differential trace pair;

providing connectivity to a second head slider for a second read differential wire pair and for a second write differential wire pair via said third and said fourth differential trace pair, respectively;

providing connection to a second disk drive read interface via said third differential trace pair; and

providing connection to a second disk drive write interface via said fourth differential trace pair.

14. A head arm comprising:

at least one ground plane formed in said head arm; and

a first and a second pair of coplanor, parallel transmission paths essentially parallel to said ground plane interconnecting both a read differential wire pair and a write differential wire pair to a head slider;

said first parallel transmission path pair interconnects to a disk drive read interface; and

said second parallel transmission path pair interconnects to a disk drive write interface.

15. A voice coil actuator arm comprising at least one head arm as in Claim 14.

16. The apparatus of Claim 15,

wherein said head arm is further comprised of:

a third and a fourth pair of coplanor, parallel transmission paths essentially parallel to said ground plane interconnecting both a second read differential wire pair and a second write differential wire pair to a second head slider;

said third parallel transmission path pair interconnects to a second disk drive read interface; and

said fourth parallel transmission path pair interconnects to a second disk drive write interface.

17. The apparatus of Claim 16, further comprising:

a second head arm as in Claim 15 interconnecting a third head slider, a third disk read interface and a third disk write interface.

18. The apparatus of Claim 17, further comprising:

a third head arm as in Claim 15 interconnecting a fourth head slider, a fourth disk read interface and a fourth disk write interface.

19. The apparatus of Claim 15, further comprising:

an analog interface interconnecting said first parallel transmission path and said disk read interface; and

said analog interface interconnecting said second parallel transmission path and said disk write interface.

20. A disk drive comprising said voice coil actuator arm of Claim 15.

21. The apparatus of Claim 14, further comprising:

a third and a fourth pair of coplanor, parallel transmission paths essentially parallel to said ground plane interconnecting both a second read differential wire pair and a second write differential wire pair to a second head slider;

said third parallel transmission path pair interconnects to a second disk drive read interface; and

said fourth parallel transmission path pair interconnects to a second disk drive write interface.

22. A method for manufacturing a head arm electrically interconnecting a head slider with a disk drive read interface and a disk drive write interface, comprising the steps of:

creating a ground plane in said head arm; and

providing at least two differential signal paths as essentially parallel, coplanor traces on said head arm traversing an essentially fixed distance parallel to said ground plane as a first differential trace pair and a second differential trace pair;

wherein providing connectivity to said head slider via said first and said second differential trace pair;

wherein said first differential trace pair provides connection to said disk drive read interface; and

wherein said second differential trace pair provides connection to said disk drive write interface.

23. Said head arm as a product of the process of Claim 22.

24. A method of manufacturing a voice coil actuator arm, comprising the steps of:

using said head arm of Claim 23 to provide electrical interconnection between said head slider and said disk drive read interface and said disk drive write interface.

25. The method of Claim 24,

wherein said head arm is a product of the process of Claim 22 further comprising the steps of:

providing a third differential signal path and a fourth differential signal path as essentially parallel, coplanor traces on said head arm traversing an essentially fixed distance parallel to said ground plane as a third differential trace pair and a fourth differential trace pair;

providing connectivity to a second head slider for a second read differential wire pair and for a second write differential wire pair via said third and said fourth differential trace pair, respectively;

providing connection to a second disk drive read interface via said third differential trace pair; and

providing connection to a second disk drive write interface via said fourth differential trace pair.

26. The method of Claim 25,

wherein said voice coil actuator arm is further comprised of a second head arm; and

said method is further comprised of the steps of:

manufacturing said second head arm to provide electrical interconnection between a third head slider and a third disk drive read interface and a third disk drive write interface as in Claim 23.

27. The method of Claim 26,

wherein said voice coil actuator arm is further comprised of a third head arm; and

said method is further comprised of the steps of:

manufacturing said third head arm to provide electrical interconnection between a fourth head slider and a fourth disk drive read interface and a fourth disk drive write interface as in Claim 23.

28. The method of Claim 24, further comprising

providing a first read analog interface connection to said first differential trace pair;

providing a first disk read analog interface connection to said disk drive read interface;

providing a first write analog interface connection to said second differential trace pair; and

providing a first disk write analog interface connection to said disk drive write interface.

29. A method of manufacturing a disk drive comprising the step of using said voice coil actuator arm as a product of Claim 24.

30. Said disk drive as a product of the process of Claim 29.